October 5, 2011   400 Turner Street, Suite 102
                                                              Blacksburg, VA 24061

Dr. Shane Ball
USDA-National Institute of Food and Agriculture

Dear Shane:

Greetings from the FAEIS team! Following this letter you will find the third statistical quarterly report, as required by NIFA's RFA which states that FAEIS will "Produce quarterly reports on the progress in addressing transcription errors, outliers and missing values." (Appendix B). Major accomplishments since the second report (May 2011), include recovery of missing data and data verification for the 1862 and 1890 land grant institutions and the responses by the FAEIS team to recommendations by statistical expert panel.

A great number of missing data for the 2004-2010 reporting years for the 1862 and 1890 land grant institutions have been recovered through the FAEIS data quality assurance procedure. Validating all majors by program area for each institution has been ongoing endeavor requiring over 2,500 person-hours and the efforts of four graduate research assistants. Participation in the FAEIS student surveys by Land Grant Colleges of Agriculture is at 97% for the years 2004-2009, with 100% expected completion for the 2010 student surveys.

On April 8, 2011, the FAEIS Statistical Expert Panel met in Washington, DC. In its closing comments to the FAEIS team the panel deemed FAEIS "unique, reliable and important." Their June 2011 final report provided the FAEIS team with recommendations (Appendix D).

This progress report includes responses from the FAEIS team to the Statistical Expert Panel's recommendations. Some of our major responses include adjusting the FAEIS web page to allow public access to student survey data and reports, regular scanning of the database for atypical data and correcting them as needed, redesigning the report builder for nontechnical end-users and building a data dictionary to make the web page user friendly.

Additionally, since the last progress report, we have completed our USDA CRIS Report of annual accomplishments, which is attached as Appendix E. Thank you and please contact us if you have any questions on this third quarterly report.

Sincerely,

Mary A. Marchant, Ph.D.
Professor and FAEIS Principal Director

Progress in the Statistical Analysis of the Quality of the FAEIS Data

September 29, 2011

Food & Agricultural Education Information System

http://faeis.usda.gov
mailto:faeis@vt.edu

540-231-4941

- **Mary Marchant**, Ph.D., FAEIS Principal Investigator
  Agriculture and Applied Economics Department, Virginia Tech

- **Eric Smith**, Ph.D., FAEIS Co-Principal Investigator
  Statistics Department, Virginia Tech

- **Bill Richardson**, FAEIS Project Manager
  Agriculture, Human and Natural Resources Information Technology (AHNR-IT),
  Virginia Tech

- **Eric Vance**, Ph.D., FAEIS Statistical Project Manager and LISA Director
  LISA (Laboratory for Interdisciplinary Statistical Analysis) and Statistics
  Department, Virginia Tech

- **Timothy Mack**, FAEIS Co-Principal Investigator
  School of Graduate Studies and Research, Indiana University of Pennsylvania

- Albert Shen, Ph.D., FAEIS Statistical Graduate Research Assistant
  Statistics Department, Virginia Tech

- Katie Griffin, FAEIS Graduate Research Assistant
  Statistics Department, Virginia Tech

- Lisa Hightower, FAEIS Graduate Research Assistant
  Agricultural and Extension Education Department, Virginia Tech

- Michael Albanese, FAEIS Undergraduate Research Assistant
  Economics and Finance Department, Virginia Tech

Introduction

This is the third in a series of quarterly reports from FAEIS to NIFA, in response to item #9 in the 2010-11 FAEIS RFA (see Appendix B) which states: "Produce quarterly reports on the progress in addressing transcription errors, outliers and missing values. Include statistical procedures used to correct and process FAEIS data."

Summary

In the first and second progress report, the FAEIS Team explored the use of the Boxplot method and three additional methods (Natural Standard Deviation, Pseudo Standard Deviation, Lag1 Difference) to identify outliers. We showed that the three methods are more sensitive than the Boxplot method for identifying outliers.

On April 8, 2011, the FAEIS Statistical Expert Panel met in Washington, DC. In its closing comments to the FAEIS team the panel deemed FAEIS "unique, reliable and important." The panel has completed its recommendations and report from the meeting. This progress report includes the response from the FAEIS team to the panel's recommendations.

A great number of missing data for the 1862 and 1890 land grant institutions have been recovered through the FAEIS data quality assurance procedure where institutions' data are examined for the 2004-2010 reporting years and verified for accuracy. Validating all majors by program area for each institution has been an enormous ongoing endeavor requiring approximately 2,500 person-hours and the efforts of four graduate research assistants. Data verification and participation in the FAEIS student surveys by Land Grant Colleges of Agriculture is at 97% for the years 2004-2009, with 100% expected completion for the 2010 student surveys.

1. Eliminating Missing Values and Outliers
(Refers to 2010-11 RFA items 2 and 5; see Appendix B)

The FAEIS Team has put forth great effort to review the enrollment and degrees awarded data for the 1862 and 1890 land grant institutions. After completing this project for the 1862 and 1890 land grant institutions, the FAEIS team will address these issues for non-land grant institutions.

There are a total of 59 1862 land grant institutions. Two are community colleges, which only offer associate's degrees. In addition, three others do not have agricultural programs, leaving 54 land grants with colleges of agriculture. Of the 54 colleges, ALL have their enrollment data entered for the years 2004-2009, as of September 2011. However, 4 colleges are still missing degrees awarded for one or more years. Note that while these institutions have data entered for each of the years listed above, the data may not yet be complete for individual surveys for each year.

For the 18 1890 land grant institutions, 16 have enrollment data entered for years 2005-2009 as of September 2011. All 18 institutions have degrees awarded data for years 2005-2009. Again, note that while these institutions have data entered for the years listed above, the data may not yet be complete for individual surveys in each year.

The FAEIS team has been working hard to not only acquire missing data, but validate existing data. Much of the previously missing data in FAEIS has been filled in via information found on the university's institutional research (IR) websites and in their published fact books. The validation process consists of checking for outliers and being aware of CIP migration, and correcting these occurrences. FAEIS is unique in compiling this data for our program areas.

Between September 2010 and August 2011, alterations were made to the existing FAEIS data. For percentages of the altered enrollment data for years 2005-2009, see Table 1 below. The FAEIS team was able to fill in about 5-10% of missing data by finding fact books on institutions' websites or by contacting the institutions themselves. Fact book data were entered into the FAEIS system if such data were detailed at the CIP code level and broken down by degree level. Gender and/or ethnicity may not have been included depending on availability. An example of where data were filled in is shown by the red cells of Tables 2 and 3 using Baccalaureate enrollment in the Food Science and Technology academic area for years 2005-2009.

Also shown in Table 1 are the percentages of changed enrollment data for years 2005-2009. The FAEIS team changed about 2-4% of enrollment data since September 2010. Outliers were identified in the data and further investigation was made on those numbers. FAEIS contacted the institution to check with their records to validate the existing data and mistakes were fixed. When possible, FAEIS again sought out institution fact books to check outliers against. An example of where data were changed is shown by the blue cells of Tables 2 and 3 using Baccalaureate enrollment in the Food Science and Technology academic area for years 2005-2009.

Table 1. *Corrected Enrollment Data between September 2010 and August 2011*

(n = 2102)	2005	2006	2007	2008	2009
% Filled In	9.8%	8.2%	6.7%	5.2%	4.9%
% Changed	4.2%	1.9%	2.0%	3.7%	3.0%

Table 2. *Baccalaureate Enrollment in Food Science and Technology: 9/2010*

Institution	2005	2006	2007	2008	2009
Florida A and M University	.	21	.	24	.
Louisiana State University	28	25	27	19	.
North Carolina State University at Raleigh	55	60	39	61	.
Oklahoma State University	.	.	28	31	23
University of Delaware	.	.	.	1	25
University of Maryland	32	5	27	40	32
University of Massachusetts	.	32	40	47	66
University of Tennessee	51	57	.	81	91

Table 3. *Baccalaureate Enrollment in Food Science and Technology: 8/2011*

Institution	2005	2006	2007	2008	2009
Florida A and M University	.	21	24	24	27
Louisiana State University	28	25	27	19	.
North Carolina State University at Raleigh	55	50	39	61	57
Oklahoma State University	.	.	28	31	23
University of Delaware	11	22	28	22	25
University of Maryland	18	19	27	40	32
University of Massachusetts	27	32	40	47	66
University of Tennessee	51	57	65	81	91

Note: The missing values that remain in table 3 may be missing because such a program does not exist yet/anymore or there are no students enrolled, not because data are missing.

.	Missing values
	Entered since 9/2010
	Corrected since 9/2010

2. Responses to the Recommendations from Statistical Expert Panel and Future Work
(Refers to Conclusions from the FAEIS Expert Panel Meeting, April 8, 2011; see Appendix D)

The FAEIS team met with the Statistics Expert Panel, on Friday, April 8, 2011 in Washington, D.C. to discuss the approaches taken to ensure high quality data for use and to elucidate options for further enhancing quality. The general consensus was that the team has worked hard to improve quality and the panel recommended some changes. Some of these are discussed below.

The FAEIS data have grown from a data set collected on a small number of universities to a large data repository for a large, diverse set of schools and programs, some with little relation with agriculture. The team will work with NIFA/USDA to develop a more focused, cleaner database. To do this, the following tasks will be undertaken.

1. The team will work with NIFA/USDA to identify the central mission and boundaries associated with the database and its primary use. This will help the data to be better aligned to the national priorities of the USDA. Prioritizing will help the FAEIS team to address the statistical issues (outliers, imputation) with more focus and to help clarify the important issues to address with the data.

2. The FAEIS team will adjust the web page so a username and password are no longer required. Since this is a public database funded by the USDA; it must be accessible to all. We will lose the ability to know how many people use FAEIS, but the extra availability will compensate for this loss of information.

3. The report builder will be redesigned so that nontechnical end-users can easily obtain data at night and on weekends. We are considering offering two services: one that provides access to general information up front and more technical services (i.e., the extensive help desk services) for the people who want it.

4. The team will continue to scan the data for atypical values and correct them as needed. Also, the team will use imputation methods to improve the consistency of the data and conclusions.

5. Clarify that the trends evident in the analysis of temporal change may be due to increases in the number of institutions sampled from year to year, not due to increasing enrollment, graduation, etc.

6. The team will add census date, discipline definitions and the reporting period. This would require making more demands on the institution, but it would ensure that data are consistent across reporting sites.

7. The team will build a data dictionary to help better understand when data are collected and what terms such as "enrollment" mean. This will help to clarify differences between FAEIS and other educational data bases such as IPEDS.

RFA Items		Timeline for Deliverables	
3	√	Creation of SAS dataset and report verification	10/2010
2,5	√	Identification of outliers and missing data	04/2010
9	√	Statistical update quarterly report I	01/2011
2,5	√	Improvement of identification of outliers	04/2010
2	√	Comparisons of IPEDS and FAEIS	04/2011
1,6	√	Statistical Expert Panel meeting	04/2011
9	√	Statistical update quarterly report II	05/2011
2	√	Automated identification of problematic data	06/2011
	√	Process for correction of outliers	07/2011
	√	Response to the recommendations from Statistical Expert Panel	09/2011
9	√	Statistical update quarterly report III	09/2011

Appendix A

FAEIS Help Desk Staff

	Bill Richardson: FAEIS Project Manager Bill Richardson received a Bachelor of Science in forestry at Virginia Tech in 1976. He began working at Virginia Tech in 1983 and in 1993 in Agriculture, Human and Natural Resources Information Technology in the College of Agriculture and Life Sciences. He has been with the FAEIS project since it came to Virginia Tech in 2001, starting as the lead programmer and later adding the dual role of project manager.
	Albert Shen: FAEIS Statistics Graduate Research Assistant Albert Shen received a Bachelor of Science in physics at National Tsing-Hua University in Taiwan. He received a Masters degree in statistics from Columbia University. He completed a Doctorate in biophysics from the University of Virginia. He is currently working toward a Doctorate in the Statistics Department at Virginia Tech.
	Katie Griffin: FAEIS Statistics Graduate Research Assistant Katie Griffin received a Bachelor of Science in mathematical sciences from Loyola University Maryland. She is currently completing her Masters degree in the Statistics Department at Virginia Tech.
	Lisa Hightower: FAEIS Help Desk Graduate Research Assistant Lisa Hightower received a Bachelor of Science in journalism and minored in video production and a Masters degree in agricultural communication at the University of Florida. She is currently completing a Doctoral degree in the Agricultural Education and Extension Department at Virginia Tech.
	Michael Albanese: FAEIS Help Desk Undergraduate Research Assistant Michael Albanese is currently working on a Bachelors degree with double majors in economics and in finance at Virginia Tech.

FAEIS Principal Investigators

	Dr. Mary Marchant: Principal Investigator Dr. Mary Marchant obtained all of her advanced degrees at the University of California Davis. Upon graduating with a Ph.D. in agricultural economics, she joined the University of Kentucky faculty, where she worked for 17 years. Dr. Marchant joined Virginia Tech (VT) as Associate Dean and Director of Academic Programs for the College of Agriculture and Life Sciences in April 2006 and recently joined the VT faculty in the Department of Agriculture and Applied Economics.
	Dr. Tim Mack: Co-Principal Investigator Dr. Tim Mack is the dean of the School of Graduate Studies and Research at Indiana University of Pennsylvania (IUP). Dr. Mack came to IUP from Georgia Southern University, where he was the Dean of the Jack N. Averitt College of Graduate Studies. Previous to that position, he worked at Virginia Tech, serving for 3 years as Associate Dean for Information Technology and Distance Education in the College of Agriculture and Life Sciences. Dr. Mack was instrumental in bringing FAIES to VT and served as the original principal investigator.
	Dr. Eric Smith: Co-Principal Investigator Dr. Eric P. Smith has been a member of the Statistics Department at Virginia Tech faculty since 1982 and chair of the department since 2006. His research focuses on the development and application of statistical methods to help understand and solve environmental and ecological problems. He was the director of the Statistical Consulting Center 1995-2004.
	Dr. Eric Vance: Statistical Project Manager Dr. Eric Vance is an Assistant Research Professor in the Department of Statistics at Virginia Tech. He received his MS in statistics and decision sciences from the Institute of Statistics and Decision Sciences at Duke University and his Ph.D. in Statistical Science from the Department of Statistical Science at Duke University. He has more than 7 years of experience contributing statistical expertise to interdisciplinary research projects. Since 2008, he has been the director of the Laboratory for Interdisciplinary Statistical Analysis (LISA).

Appendix B

Final Year of Contract – 2010/2011 RFA

NIFA calls for significant advanced expertise, detailed reporting and communications:

1. Because FAEIS is a national database, it is expected that data management and analyses must be reviewed by an external expert panel. The expert panel will determine the limitations of FAEIS data, proper interpretation and analyses of data from a voluntary data submission process, which is an unreliable data collection source.

2. Data and data analyses must be the products of significant statistical expertise that reflects standards for survey data management, analyses, and interpretation. Transcription errors will be corrected by implementing quality control procedures before the statistical analyses are performed. Methods to accomplish this include:
   a. Proofing data visually in column by row format (Excel or SAS file) by FAEIS employees. In addition, use exploratory data analyses as an additional quality check and test the assumptions.
   b. Systematic testing of data to determine its data accuracy to a "gold-standard" database – which is the IPEDs database.
   c. Outlier tests to highlight abnormal values and eliminate them before other statistics are calculated. Also, remove any redundancy and "orphan records" from the database. Applicant should use appropriate statistical outlier tests to determine if data are wrong and can be removed. Examples include the Shapiro-Wilks test, non-parametric methods and robust statistics (e.g., median and median absolute deviation). Generally, census/survey data are messy and often require multiple imputation methods.

3. SAS software is to be used to conduct data management (Excel and SAS files as output) to ensure ease of data transfer.

4. Data must correctly reflect the real world. All tests and procedures correcting the data must be completed before the FAEIS clienteles are given access to the data.

5. Missing data must be addressed. Examples of analysis techniques to perform this include the (1) Casewise deletion, (2) Pairwise deletion, (3) Mean substitution, (4) Hot-deck imputations, (5) sample weight imputation, and (6) Proxy pattern-mixture analysis or a combination of others.

6. The "no-universe database problem" must be addressed. Each year, the numbers in FAEIS have increased because FAEIS has captured more data – not because the number of students has necessarily increased. Statisticians might call this a trend in the mean/count. In addition, degrees within Classification of

Instructional Program (CIP) codes have changed dramatically over the years – including degrees that were not part of the original CIP (1981). For example, the 01 CIP (agriculture) has been changed 35 times since 1978 (Survey of Earned Doctorates – SED, NSF) according to the NSF. This process has by definition increased the numbers by adding new degrees to the CIP. This is also a trend in the mean/count. To adjust for the effect of the population (universe) increasing, the total number of science/engineering majors must be added to the FAEIS dataset.

7. Prepare a complete and up-to-date list of all sources, that is, FAEIS contacts, and include in the final report.

8. Develop a final report using a similar format as the National Science Foundation (use SED, as example) that shows the improvement of the database and tables with summarized results compared to IPEDS data.

9. Produce quarterly reports (due January 1, April 1, July 1 and October 1) on the progress in addressing transcription errors, outliers, and missing values. Include statistical procedures used to correct and process FAEIS data.

10. Conduct a statistically valid, random survey to collect FAEIS clientele data. This survey must clearly define the target population and the random sample must match the target population. The sample size must be large enough and the response rate must exceed 70% (90-99% far better) (NSF=93%, IPEDS >99+ %). The survey must use various methods: mail, Internet, telephone surveys, etc. The survey must be well written, tested and contain no leading questions. The survey personnel selected must be professionals well trained to conduct surveys.

Appendix C

SAS procedures for analyzing the FAEIS Data

Procedure	SAS code file	Note
Download/Update FAEIS data from Oracle to SAS files	**Connection to Oracle.sas**	♦ use "sqldeveloper " use "sqldeveloper " to access Oracle and find the data files (views in Oracle) to download ♦ Username and Password for accessing Oracle files can be found in the SAS code ♦ change the Libname to your own folder ♦ Remember to rename the old SAS data files to keep them for your records. If not renamed, the SAS data files will be replaced by the new ones.
Create tables from SAS data files to compare with tables from Report Builder	**Create SAS tables.sas**	♦ change the values or the variables in the "where" statement to generate different tables ♦ change the variables in the "table" statement and the "class" statement to obtain different categories ♦ variable q is the data (number of enrollments, degree awarded, or placement)
Boxplot and Scatter plot for identifying outliers:	**Boxplot & Scatter Plot.sas**	♦ Using "Food Science and Technology" Baccalaureate degree as an example ♦ Years 2004-2009 ♦ Can use Macro to create plots for other program or academic areas
SAS Macro for repeating similar SAS procedures	**SAS Macro for Boxplots and Scatter Plots.sas**	♦ Using Boxplots and Scatter Plots as an example ♦ Can be converted to other procedures
Three methods of identifying outliers: 1. Natural Variance 2. Pseudo Standard Deviance 3. Lag1 Method	**Natural Variance Method.sas Pseudo Standard Deviation Method.sas Lag1 Difference Method.sas**	♦ Using "Food Science and Technology" Baccalaureate degree as an example ♦Years 2004-2009 ♦ Can use Macro to create plots for other program or academic areas
Identifying zeros and missing data	**List Zeros and Missing Data .sas**	♦ Years 2004-2009
Identifying purged data	**Identifying Purged Data.sas**	♦ Use Macro to create plots for other program or academic areas
Imputation	**Imputation of FAEIS data (proc MI).sas**	♦ save the imputed data on another (temporary) file and leave the original data unchanged ♦ the "seed" is 3315, changing the number will generate different imputation result

Appendix D

Conclusions from the FAEIS Expert Panel Meeting, April 8, 2011

1. A cleaner set of data with a much narrower focus (agriculture only) would be more valuable to the funding agency, as well as users, instead of collecting everything related to agricultural sciences. A number of components have nothing to do with agriculture.

2. A central mission with specifically defined boundaries that FAEIS adheres to is needed. These must be specified by NIFA and not the peer panel (What can FAEIS do with the data?). FAEIS team should generate higher-level findings (a published report similar to IPEDS and SED) and align the findings with the USDA's national priorities. A published report would help to make the case that this data project is valuable to the funding agency.

3. The USDA/NIFA must remove the vague objectives in the RFA. Clarification must be demanded by NIFA in order to ensure that the project activities align with the funding agency's expectations.

4. Eliminate the username and password requirement. This is a public database funded by the USDA; it must be assessable to all. We have no idea of how many people use FAEIS, but we assume it is quite limited.

5. The report builder must be redesigned so that nontechnical end-users can obtain data at night and on weekends. The FAEIS website is extremely confusing to use at best and often impossible for the public to surf. The systematic process, step-by-step, includes about 20 steps to create a table of many different layers of data collected. Consider offering two services: provide access to general information up front and more technical services (i.e., the extensive help desk services) for the people who want it.

6. Outlier data have been found in recent analyses, even though FAEIS has assured the USDA/NIFA that transcription errors, missing data and outliers had been corrected and/or removed. Implementing quality control procedures must be performed before tables are created. The RFA clearly addressed these issues. FAEIS must address the validity of the volunteered data compared to IPEDS. Findings from the quality assurance study should feed back into the verification process.

7. Clarify that the trends evident in the graphs may be due to increases in the number of institutions sampled from year to year, not due to increasing enrollment, graduation, etc.

8. There is not a lot of front structure with the data. The team must add census date, discipline definitions and the reporting period. This would require making more demands on the institution, but it would ensure that data are consistent across reporting sites.

9. There needs to be a data dictionary readily available and easy to access on the website. There needs to be a more comprehensive term and definition web page, which is easier to find. Terms such as "enrollment" mean different things to different people, professions and institutions. Is enrollment taken the semester before, the 1st day of class, the 4th day, or on the last day to drop?

10. The future of the FAEIS database will be linked to its ability to meet the USDA's need to address the STEM pipeline in food and agricultural sciences. The USDA needs data so that it can accurately talk about where the new scientists are coming from (students enrolled, degrees awarded) and going (graduate placement). FAEIS can provide this data and should market itself accordingly.

Appendix E

2010-11 FAEIS USDA-CRIS Report of Annual Accomplishments-submitted August, 2011

Title: Improvement and Marketing of the Food and Agricultural Education Information System (FAEIS)

Grant Number: 2008-38420-04799 CRIS Number: 0215506

Reporting period: 09/01/2010 to 08/31/2011

Progress Report:
Section 41. (For organization abbreviations see section 43) 1. FAEIS WEB SITE: The FAEIS team maintains over 4,000 individual html pages, PDFs, spreadsheets, and images on the FAEIS web site. Since July 2010, the FAEIS public website received 85,389 page hits from 9,570 unique visitors. 2. CUSTOMIZED REPORT BUILDER REQUESTS: The FAEIS Help Desk team has responded to requests for customized reports from USDA Undersecretary of Agriculture for Research, Education, and Economics Dr. Katherine Woteki's office, USDA-NIFA and academic deans. Since July 2010, FAEIS users logged in 518 report builder sessions and generated 4,798 reports. 3. FAEIS STATISTICS EXPERT PANEL: The panel was created in 2011 to provide the FAIES team with feedback on its database. A list of recommendations was prepared by the panel and was addressed by the FAEIS team. 4. DATA QUALITY: The FAEIS team developed a data quality assurance protocol where institutions' data are examined for the 2004-2010 reporting years and verified for accuracy. Approximately 2,500 person-hours and the efforts of four graduate research assistants have been used toward this effort. 5. LAND-GRANT INSTITUTIONS: Data verification and participation in the FAEIS student surveys by Land-Grant Colleges of Agriculture is at 97% for the years 2004-2009, with 100% expected completion for the 2010 student surveys. 6. STAKEHOLDER ORGANIZATIONS: Participation in the FAEIS database is consistently around 95% for higher education institutions in our stakeholder organizations - APLU-APS; AASCARR; BOHS; SAF; and NAUFRP. 7. COLLEGE ENROLLMENT SURVEY: The college enrollment survey had participation from 143 higher education institutions and 152 individual colleges and departments, with over 240,000 undergraduate and graduate students enrolled. 8. PEER PANEL ENGAGED: The peer panel met following the APLU 2010 meeting with the largest number of stakeholders ever represented, including first-time representatives from FALCON, HSI, 1994 Land-Grants, who joined returning panel members representing USDA-NIFA, 1890 and 1862 Land-Grants, APLU, AASCARR, BOHS, CAFCS, NAUFRP, and SAF. The peer panel adopted a resolution in support of FAEIS and future funding. 9. STAKEHOLDER PRESENTATIONS: The FAEIS team members made presentations to our funding sponsor, USDA-NIFA, and at annual conferences of our partnering organizations: APLU-APS, APLU Academic Summit, AASCARR, FALCON, HACU, NAUFRP, SAF and NACTA. 10. FAEIS NEWSLETTERS: Seven FAEIS newsletters were created and emailed to over 1,400 FAEIS users, including one special edition highlighting Hispanic-Serving Institutions. 11. FAEIS POSTERS AND PUBLICATIONS: Scholarly output from the FAEIS team included one peer-reviewed NACTA article and five conference presentations and posters. 12. NEWS MEDIA COVERAGE OF FAEIS: The FAEIS project and data were featured in four articles from the Associated Press,

USA Today, and Farm World, and a national radio news story and podcast on This Week in Agriculture. 13. INTERNATIONAL PROGRAMS' DATABASE: The international database includes data from 161 participating institutions documented over 396 projects in 156 countries.

Publications:

FAEIS NEWSLETTERS (JULY 2010- JUNE 2011): Changes to Degree Programs in 2010, February 23, 2011, Hightower, L., K. Griffin, E. Smith, M.A. Marchant, W. Richardson, E. Vance, A. Bell, T. Mack, Y. Shen, & J. Hamm.

Using FAEIS Reports to Create Grant Proposals, December 13, 2010, Hightower, L., T. Mack, W. Richardson, M.A. Marchant, J. Hamm, E. Smith, E. Vance, A. Bell, K. Griffin, & Y. Shen.

FAEIS Peer Panel Convenes at APLU Meeting, October 31, 2010, Hightower, L., A. Bell, M.A. Marchant, W. Richardson, E. Smith, E. Vance, J. Hamm, T. Mack, K. Griffin, & Y. Shen.

Special Edition: Hispanic-Serving Institutions, September 16, 2010, Hightower, L., W. Richardson, M.A. Marchant, E. Smith, E. Vance, T. Mack, A. Bell, K. Griffin, Y. Shen, & J. Hamm.

2010 Surveys Begin Soon, September 16, 2010, Hightower, L., W. Richardson, M.A. Marchant, J. Hamm, E. Smith, E. Vance, T. Mack, A. Bell, K. Griffin, & Y. Shen.

A Look at Bachelors' Degrees Awarded by Program Area and Region, August 23, 2010, Hightower, L., W. Richardson, J. Hamm, M.A. Marchant, E. Smith, E. Vance, T. Mack, A. Bell, K. Griffin, & Y. Shen.

Exploring Agriculture Enrollment by Race and Institution Type, July 19, 2010, Hightower, L., W. Richardson, J. Hamm, M.A. Marchant, E. Smith, E. Vance, T. Mack, A. Bell, K. Griffin, & Y. Shen.

NEWS ARTICLES AND PODCAST: What is the Food and Agricultural Education Information System? Hamm, J., M.M. Marchant, J. Blue, This Week in Agriculture, March 2011. (http://www.thisweekinag.com/audio/this-week-in-ag-0034-what-food-and-agricultural-education-information-system)

College Enrollment Attests Interest in Ag is on the Rise, Mihaljevich, M.F., Farm World, October 27, 2010. (http://www.farmworldonline.com/News/NewsArticle.asp?newsid=11348)
More Women Driving College Ag Program Expansion, Mihaljevich, M.F., Farm World, October 27, 2010. (http://www.farmworldonline.com/News/NewsArticle.asp?newsid=11349)

Job Prospects Yield Large Crop of Students in Ag Schools, Mercer, D., USA Today, November 17, 2009. (http://www.usatoday.com/money/industries/food/2009-11-17-ag-jobs_N.htm)

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ADVISORY PANELS AND WORKBOOKS: 2010 FAEIS Peer Panel Annual Meeting, Marchant, M.A., W. Richardson, J. Hamm, T. Mack, E. Smith, E. Vance, L. Hightower, A. Bell, Y. Shen, & K. Griffin, November 16-17, Post-Workshop of The 2010 Association of Public and Land-Grant Universities (APLU) Conference, FAEIS Peer Panel Workbook (200+ pages), Dallas, TX. (http://www.faeis.ahnrit.vt.edu/peer_panel/2010/2010ppm.shtml)

2011 FAEIS Statistics Expert Panel Inaugural Meeting, Marchant, M.A., W. Richardson, E. Smith, E. Vance, T. Mack, J. Hamm, Y. Shen, K. Griffin, L. Hightower, & A. Bell, April 8, 2011, FAEIS Statistics Expert Panel Workbook (200+ pages), Washington, D.C. A 200+-page workbook was developed for the FAEIS Statistics Panel members outlining the history, mission, goals, and accomplishments of FAEIS. (http://www.faeis.ahnrit.vt.edu/stats_panel/2011_stats_panel.html)

ABSTRACTS/PRESENTATIONS: Higher Education at Tribal Colleges in Life, Food, Veterinary, Natural Resources, and Agricultural Sciences, Hamm, J., L. Hightower, W. Richardson, M.A. Marchant, T. Mack, E. Smith, & E. Vance, 6th Annual First Americans Land-Grant Consortium (FALCON) Conference, Bloomington, MN., October 25, 2010.

The Food and Agricultural Education Information System (FAEIS), Richardson, W., The Society of American Foresters (SAF), 90th National Conference, Albuquerque, NM., October 28, 2010.

ABSTRACTS/POSTERS: Engaging Students Through International Experiences to Expand Diverse Perspectives, Hightower, L., A. Bell, K. Griffin, Y. Shen, W. Richardson, M.A. Marchant, E. Smith, E. Vance, J. Hamm, & T. Mack, 2011 North American Colleges and Teachers of Agriculture (NACTA) Annual Conference, Edmonton, Canada, June 15, 2011. This poster was also presented at the 2011 APLU-National Academic Programs Summit: Creating Change-Curricula Reform for a 21st Century Education, Indianapolis, IN., August 3-5, 2011.

Studying Agriculture Internationally: Tracking International Study Abroad Projects, Hightower, L., K. Griffin, Y. Shen, M.A. Marchant, E. Smith, E. Vance, W. Richardson, A. Bell, J. Hamm, & T. Mack, Virginia Tech's 3rd Annual Conference on Higher Education Pedagogy, Blacksburg, VA., February 4, 2011.

Products:
FAEIS WEB SITE: See section 41. FAEIS NEWSLETTERS: See section 41. NEWS MEDIA COVERAGE OF FAEIS: See section 41. APLU ASSESSMENT: The FAEIS Fall College Survey provides APLU an accurate base for dues assessment and collection from Land-Grant colleges and universities. BROCHURE: This tri-fold, color, glossy brochure summarizes the purpose and goals of the FAEIS program. (http://www.faeis.ahnrit.vt.edu/documents/handouts

/2011_FAEIS_brochure.pdf). PRESENTATIONS: FAEIS Team and Peer Panel members have given presentations at the following conferences/meetings: AASCARR, CAFCS, APLU-Academic Programs Section, APLU-APS Academic Summit conference, NACTA, FALCON, SAF, NAUFRP, and HACU. STATISTICS EXPERT PANEL AND PEER PANEL WORKBOOKS: See section 43. INTERNATIONAL PROGRAMS' DATABASE: One-hundred and sixty-one (161) institutions and 396 projects in 156 countries are included in the International Programs' database.

Outcomes:
Section 43. FAEIS compiles nationwide higher education data for agriculture, natural resources, family and consumer sciences/human sciences, veterinary medicine and other related disciplines. The data include undergraduate and graduate student enrollment, degrees awarded at all degree levels, placement at all degree levels, and faculty numbers and salaries by rank and disciplines. The above data is also disaggregated by gender and ethnicity. Student Surveys - 2010 Undergraduate Enrollment - 222,755 students (173 institutions); - 2010 Graduate Student Enrollment - 49,751 students (146 institutions); - 2009-2010 Degrees Awarded - 47,775 students (160 institutions); - 2009-2010 Placement - 10,414 Baccalaureates, 1,222 Masters Graduates, 455 Doctoral Graduates totaling 12,091 students (43 institutions). College Enrollment Survey - 242,040 undergraduate and graduate students from 152 individual colleges at 143 higher education institutions Faculty Surveys - 8,154 Faculty (110 Institutions) Partnering Organizations - As of September 1, 2011, the number of institutions participating by partnering organizations for 2010-2011 includes - Association of Public and Land-Grant Universities (APLU) - 73 of 109 or 67%; - 1862 Land-Grants- 54 of 59 or 92% (100% expected); Note: three do not have agriculture programs; - 1890 Land-Grants - 13 of 18 or 72% (100% expected); - 1994 Land-Grants -6 of 32 or 19%; - American Association of State Colleges of Agriculture and Renewable Resources (AASCARR) - 34 of 45 or 76%; - Board on Human Sciences (BOHS)- 46 of 51 or 90%; - Council of Administrators of Family and Consumer Sciences (CAFCS) - 109 of 152 or 72%; - First Americans Land-Grant Consortium (FALCON) - 6 of 32 or 19%; - Hispanic-Serving Agricultural Colleges and Universities (HSACU) - 6 of 57 or 11%; - National Association of University Forest Resources Programs (NAUFRP) - 63 of 67 or 94%; - Non-Land-Grant Colleges of Agriculture (NLGCA) - 40 of 68 or 59%; - Society of American Foresters (SAF) - 48 of 50 or 96%; - American Association of Veterinary Medicine Colleges (AAVMC) - 27 of 27 or 100%. The FAEIS team continues to receive support from stakeholder organizations. To view letters of support visit
http://www.faeis.ahnrit.vt.edu/peer_panel/2010/201 0ppm.shtml

Dissemination Activities:
CONFERENCE PRESENTATIONS: See sections 41 and 43. FAEIS NEWSLETTERS: SINCE JULY 2010, the FAEIS team has published seven newsletters, including a special edition on Hispanic-Serving Institutions (HSI). The newsletters have been redesigned to become more graphically dynamic, and feature an overview of one of the FAEIS partnering institutions. The newsletters also include a tutorial on developing effective reports from FAEIS data, Q & A from the Help Desk, and a welcome from a FAEIS principal investigator. NEWS STORIES AND PODCASTS: See section 43.

Future Initiatives:
Future efforts will continue to focus on FAEIS data verification and validation. Efforts will also center on implementing the recommendations of the FAEIS Peer Panel and the FAEIS Statistics Expert Panel. The FAEIS team will continue to raise the awareness of the project and build upon good working relationships with stakeholders through multimedia outreach and presentations at end user conferences.

Impacts:
FAEIS collects data from nearly 200 higher education institutions with departments and colleges focused on agriculture, natural resources, family and consumer sciences/human sciences, veterinary medicine, and other related disciplines. FAEIS data are used by staff from the USDA Undersecretary of Agriculture for Research, Education, and Economics, Dr. Katherine Woteki's office, and Congressional offices to write legislation for inclusion in Congressional bills and program guidelines. Higher education administrators also use FAEIS data for recruiting and benchmarking students and faculty, as well as institutional planning, and regional and national comparisons. FAEIS data has been widely accessed through the public FAEIS web site (http://faeis.usda.gov) as indicated by the 85,389 page visits from 9,570 unique visitors to the web site in this reporting period alone. Data quality assurance measures continue to ensure that FAEIS data accurately reflect student and faculty information for higher education institutions and their departments and colleges within the FAEIS program areas. To that effort, more than 2,500 person hours have been devoted by four graduate research students to examine FAEIS data for the 2004 - 2010 reporting years for over 70 Land-Grant institutions. As of July 2011, data verification and participation in the FAEIS student surveys by Land-Grant Colleges of Agriculture is at 97% for the years 2004-2009, with 100% expected completion for the 2010 student surveys.